Chaotic mixing in a curved pipe with periodic variations in curvature and torsion MITSUAKI FUNAKOSHI, Graduate School of Informatics, Kyoto University, Japan, BONGKYUN JANG, Korea Institute of Machinery & Materials, Korea — The chaotic fluid mixing in a helix-like circular pipe with periodic variations in curvature and torsion caused by a steady viscous flow under an axial pressure gradient of relatively small Reynolds number is examined. An approximate equation obtained under the assumption of small and slowly-varying curvature and torsion is used to calculate the cross-sectional motion of fluid particles associated with their axial motion. We examine the dependences of mixing efficiency on a few geometrical parameters and on Reynolds number, and attempt to explain them by the variation in a characteristic ratio composed of curvature, torsion and Reynolds number.

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